		NTSB ID: DEN02LA103		Aircraft Registration Number: N551SA	
		Occurrence Date: 09/08/2002		Most Critical Injury: Fatal	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place Mead	State CO	Zip Code 80542	Local Time 0930	Time Zone MDT	
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility:		Direction From Airport:	
Aircraft Information Summary					
Aircraft Manufacturer Adler		Model/Series SA-1		Type of Aircraft Gyrocraft	
Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
<p>Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:</p> <p>On September 8, 2002, approximately 0930 mountain daylight time, an Adler SA-1 gyroplane, N551SA, registered to and operated by the pilot, was destroyed when it impacted terrain and burned near Mead, Colorado. The private pilot was fatally injured. Day visual meteorological conditions prevailed, and no flight plan had been filed for the personal flight being conducted under Title 14 CFR Part 91. The local flight originated approximately 0900 from the Jefferson County (Jeffco) Airport, Broomfield, Colorado.</p> <p>Two witnesses told a sheriff's deputy that the gyroplane sounded as if it was "struggling." Two other witnesses submitted written statements. One witness said that he "could tell the aircraft was having mechanical problems." The gyroplane dropped about 1,000 feet, "lost a wing" and began to "spin and tumble out of control." Another witness said he heard the engine either "miss or stall slightly," and also saw "a rotor or a wing" come off in flight. All four witnesses saw smoke as the gyroplane impacted terrain and immediately caught fire.</p> <p>According to the deputy's report, a rotor blade was found about 150 feet north of the point of impact, and other debris was strewn to the southwest. The impact site was circular in shape, approximately 5 to 6 meters (16 to 20 feet) in diameter. The accident occurred 0.25-mile south of (Weld) county road 32 and 0.25-mile west of county road 13, at a location of 40 degrees, 12'48.30" north latitude, and 104 degrees, 57'02.80" west longitude.</p> <p>The co-builder of the accident gyroplane --- a physician and a close friend of the pilot --- contacted three gyroplane experts: the designer of the SA-1 Dominator and President of Rotor Flight Dynamics; a gyroplane aerodynamicist; and the designer of another gyroplane. They examined the wreckage and compiled both a factual and analytical report. The following is based on the factual portion of the report.</p> <p>The separated rotor blade was bowed upward and had fractured about 2 feet from the tip. The fracture was consistent with positive overload. There was orange paint and primer transfer marks on the top and upper leading edge (the tail and nose cones were painted orange). The attached rotor blade was also bent upward. The propeller blades exhibited no strike marks. The rotor head and hub bar were intact. The hub bar, normally bent 2.5 degrees upward, was found bent approximately 10 degrees upward. The roll pillow blocks bore evidence of hammering and were mushroomed. The pitch stops were similarly damaged.</p> <p>The analytical portion of the report noted the necessity of maintaining blade loading at all times in order to maintain main rotor blade rotation. The fractured main rotor blade was "a purely upward bending moment which could only have occurred if the blade rpm had dramatically slowed. If totally unloaded, the blade rpm can deteriorate as fast as 120 rpm/sec." Normal rotor blade rpm is 320 to 400 rpm. If rotor blade rpm were allowed to drop and the velocity of air moving through the rotor system were to increase, severe blade "flapping" would result. The rotor head had been subjected to</p>					
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FACTUAL REPORT

AVIATION

NTSB ID: DEN02LA103


Occurrence Date: 09/08/2002


Occurrence Type: Accident


Narrative (Continued)

severe blade flapping as evidenced by the pounding and mushrooming of the roll pillow blocks and the bent hub bar. The authors said there is no in-flight maneuver that can lead to blade flapping at normal rotor rpms. Only the unloading of the rotor blades will do this.

FAA's Civil Aeromedical Institute (CAMI) conducted a toxicological screen on specimens taken from the pilot and found 2.024 (ug/mL, ug/g) paroxetine in the blood. According to a CAMI toxicologist, paroxetine is an antidepressant and contraindicated. Some of the adverse effects include drowsiness, muscle weakness, agitation, and tremors." When advised of these results, the physician/co-builder of N551SA contacted the pilot's personal physician and learned that he had prescribed the drug for the treatment of fibromyalgia, a condition manifested by muscle soreness.

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		Occurrence Type: Accident			
Landing Facility/Approach Information					
Airport Name	Airport ID:	Airport Elevation Ft. MSL	Runway Used	Runway Length	Runway Width
Runway Surface Type: Unknown					
Runway Surface Condition: Unknown					
Type Instrument Approach: Unknown					
VFR Approach/Landing: Unknown					
Aircraft Information					
Aircraft Manufacturer Adler		Model/Series SA-1		Serial Number 001	
Airworthiness Certificate(s): Experimental (Special)					
Landing Gear Type: Tricycle					
Homebuilt Aircraft? Yes	Number of Seats: 1	Certified Max Gross Wt. 900 LBS		Number of Engines: 1	
Engine Type: Reciprocating	Engine Manufacturer: Rotax	Model/Series: 912WLS		Rated Power: 100 HP	
- Aircraft Inspection Information					
Type of Last Inspection Conditional	Date of Last Inspection 06/2002	Time Since Last Inspection 44 Hours		Airframe Total Time 44 Hours	
- Emergency Locator Transmitter (ELT) Information					
ELT Installed? No	ELT Operated?	ELT Aided in Locating Accident Site?			
Owner/Operator Information					
Registered Aircraft Owner Steven H. Adler		Street Address On File			
		City Broomfield	State CO	Zip Code 80020	
Operator of Aircraft Same as Reg'd Aircraft Owner		Street Address Same as Reg'd Aircraft Owner			
		City	State	Zip Code	
Operator Does Business As:			Operator Designator Code:		
- Type of U.S. Certificate(s) Held: None					
Air Carrier Operating Certificate(s):					
Operating Certificate:			Operator Certificate:		
Regulation Flight Conducted Under: Part 91: General Aviation					
Type of Flight Operation Conducted: Personal					
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First Pilot Information																																																																																				
Name			City		State	Date of Birth	Age																																																																													
On File			On File		On File	On File	51																																																																													
Sex: M	Seat Occupied: Single		Principal Profession: Engineer			Certificate Number: On File																																																																														
Certificate(s): Private																																																																																				
Airplane Rating(s): Single-engine Land																																																																																				
Rotorcraft/Glider/LTA: Gyroplane																																																																																				
Instrument Rating(s): None																																																																																				
Instructor Rating(s): None																																																																																				
Type Rating/Endorsement for Accident/Incident Aircraft?				Current Biennial Flight Review? 02/2002																																																																																
Medical Cert.: Class 3		Medical Cert. Status: Valid Medical--w/ waivers/lim.			Date of Last Medical Exam: 04/2001																																																																															
<table border="1"> <thead> <tr> <th>- Flight Time Matrix</th> <th>All A/C</th> <th>This Make and Model</th> <th>Airplane Single Engine</th> <th>Airplane Multi-Engine</th> <th>Night</th> <th colspan="2">Instrument Actual Simulated</th> <th>Rotorcraft</th> <th>Glider</th> <th>Lighter Than Air</th> </tr> </thead> <tbody> <tr> <td>Total Time</td> <td>280</td> <td>44</td> <td>72</td> <td></td> <td>3</td> <td></td> <td>3</td> <td>208</td> <td></td> <td></td> </tr> <tr> <td>Pilot In Command(PIC)</td> <td>222</td> <td>44</td> <td>42</td> <td></td> <td></td> <td></td> <td></td> <td>180</td> <td></td> <td></td> </tr> <tr> <td>Instructor</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 90 Days</td> <td>44</td> <td>44</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>44</td> <td></td> <td></td> </tr> <tr> <td>Last 30 Days</td> <td>18</td> <td>18</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>18</td> <td></td> <td></td> </tr> <tr> <td>Last 24 Hours</td> <td>3</td> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>3</td> <td></td> <td></td> </tr> </tbody> </table>								- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument Actual Simulated		Rotorcraft	Glider	Lighter Than Air	Total Time	280	44	72		3		3	208			Pilot In Command(PIC)	222	44	42					180			Instructor											Last 90 Days	44	44						44			Last 30 Days	18	18						18			Last 24 Hours	3	3						3		
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Seatbelt Used? Yes		Shoulder Harness Used? Yes			Toxicology Performed? No		Second Pilot? No																																																																													
Flight Plan/Itinerary																																																																																				
Type of Flight Plan Filed: None																																																																																				
Departure Point		State		Airport Identifier		Departure Time		Time Zone																																																																												
Broomfield		CO		BJC		0900		MDT																																																																												
Destination		State		Airport Identifier																																																																																
Local Flight				BJC																																																																																
Type of Clearance: None																																																																																				
Type of Airspace: Class E																																																																																				
Weather Information																																																																																				
Source of Briefing: Unknown																																																																																				
Method of Briefing: Unknown																																																																																				
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 National Transportation Safety Board FACTUAL REPORT AVIATION			NTSB ID: DEN02LA103		
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			Occurrence Type: Accident		

Weather Information					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
DEN	0953	MDT	5431 Ft. MSL	25 NM	135 Deg. Mag.
Sky/Lowest Cloud Condition: Few			9000 Ft. AGL		Condition of Light: Day
Lowest Ceiling: None			Ft. AGL	Visibility: 10 SM	Altimeter: 30.12 "Hg
Temperature: 24 °C		Dew Point: 8 °C	Wind Direction: 140		Density Altitude: 7024 Ft.
Wind Speed: 4		Gusts:	Weather Conditions at Accident Site: Visual Conditions		
Visibility (RVR): Ft.		Visibility (RVV) SM	Intensity of Precipitation:		
Restrictions to Visibility: None					
Type of Precipitation: None					

Accident Information					
Aircraft Damage: Destroyed		Aircraft Fire: Ground		Aircraft Explosion: None	
Classification: U.S. Registered/U.S. Soil					

- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot	1				1
Second Pilot					
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants					
Other Crew					
Passengers					
- TOTAL ABOARD -	1				1
Other Ground					
- GRAND TOTAL -	1				1

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	Occurrence Type: Accident	
Administrative Information		
Investigator-In-Charge (IIC) Arnold W. Scott		
Additional Persons Participating in This Accident/Incident Investigation: Mark A Schofield Aviation Safety Inspector - Airworthiness FAA Flight Standards District Office 26805 East 68th Avenue, Suite 200 Denver, CO 80249		
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